SONY

3-751-937-21 (1)

Stereo Cassette Deck

Operating Instructions

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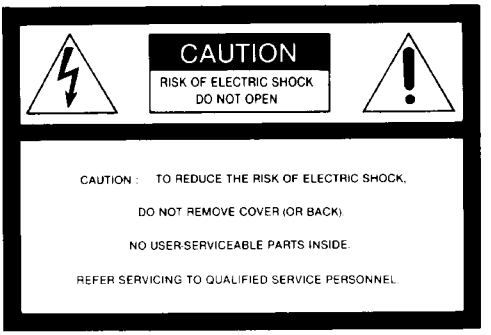
WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

*The graphical symbols are on the rear enclosure.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment away from the receiver
Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:
"How to Identify and Resolve Radio-TV Interference Problems".
This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

For the customers in Canada
This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

Owner's Record

The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. TC-RX420 Serial No._____

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Features

- **B and C type Dolby NR systems** to reduce tape hiss.
- **The Dolby HX PRO* system** which improves the linearity of a tape's high-range response during recording.
- **AMS and memory play functions** which provide easy access to a desired selection.
- **Automatic switching between line and microphone input** when recording with a microphone.

* Dolby noise reduction and HX PRO headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX PRO originated by Bang & Olufusen.

"DOLBY", the double-D symbol ⧈ "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Precautions

On safety

- This unit operates on 120 V AC, 60 Hz only.
- Should anything fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On operation

- When the unit is not used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of a safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette in the cassette holder, or if a cassette has been incorrectly inserted into the cassette holder.

On head cleaning

The head and tape path should be cleaned after every 10 hours of operation. Dirty heads and a dirty tape path may cause:

— loss of high-frequency response
— loss of sound volume
— sound drop-out

Note on cassettes longer than 90 minutes

The use of cassettes longer than 90 minutes is not recommended except for long continuous playback.

If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.
For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS."

Installation

Notes on installation

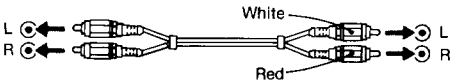
- Place the unit with the front panel facing you in a location with adequate air circulation to prevent internal heat build-up in the unit.
- Do not place the unit:
  — near heat sources such as radiators or air ducts.
  — in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
  — in an inclined position.
  — on a soft surface, such as a rug, that would block the ventilation holes on the bottom.

Do not throw away the carton and packing material.
They will come in handy when transporting the unit or shipping it for servicing.

Connections

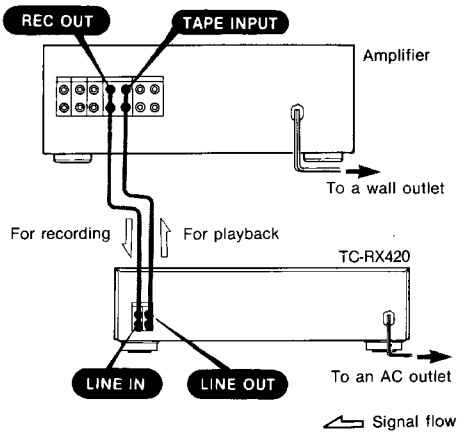
Notes on Connections

- Turn off the power to all equipment to be connected before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.



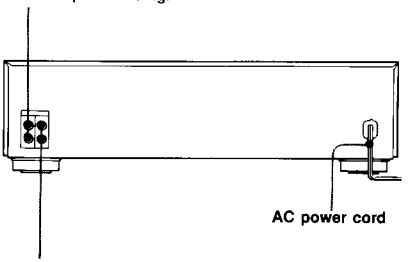
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pickup.

Basic Connection



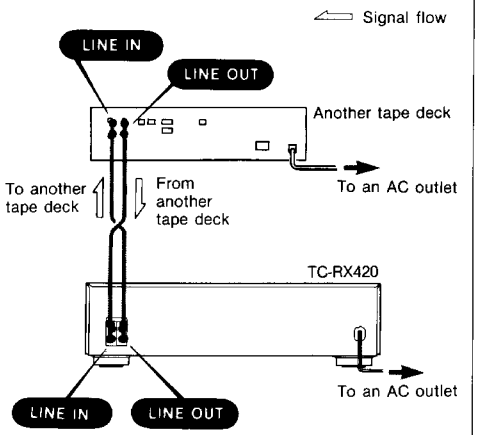
Identification of Rear Panel Parts

LINE IN (line input) jacks (phono jacks)
Connect to the tape outputs (recording outputs) of an amplifier for tape recording.



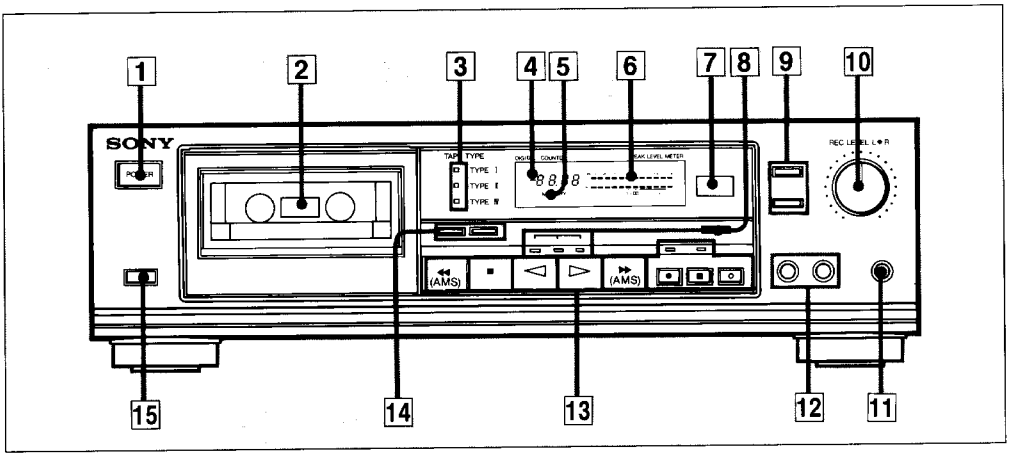
LINE OUT (line output) jacks (phono jacks)
Connect to the tape inputs of an amplifier for playback.

Connection for Tape Dubbing



Identification of Front Panel Parts

Refer to the page number indicated in ● for details.



1 POWER switch

2 Cassette holder

3 TAPE TYPE indicators

4 Digital Counter

5 MEMORY indicator

6 PEAK LEVEL METER ⓫

7 Remote control sensor
You can remotely control this cassette deck with:
— A remote commander that has an ■ mark and comes with a Sony amplifier or receiver and which can be used to control a cassette deck.
— An optional Sony remote commander that has an ■ mark.

8 DIRECTION MODE button and indicators ❼ ⓫

9 DOLBY NR (Dolby noise reduction) buttons ❼ ⓫

10 REC LEVEL (recording level) control

11 HEADPHONES jack (stereo phone jack)

12 MICROPHONE jacks (phone jacks) (left and right) ⓫

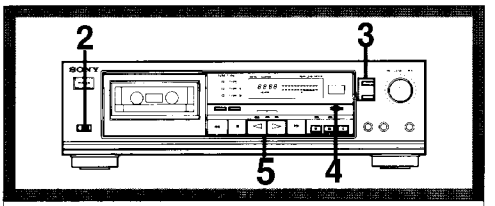
13 Tape operation buttons and direction mode, REC and PAUSE indicators
- ◀◀ (leftward fast winding) (AMS) button
- ■ (stop) button
- ▶ (forward play) button
- ◀ (reverse play) button
- ▶▶ (rightward fast winding) (AMS) button
- ● REC (record) button
- II (pause) button
- O REC MUTE (record muting) button ⓬

14 COUNTER RESET and MEMORY buttons ❾

15 ⏏ EJECT button

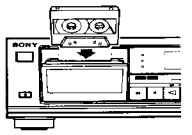
Playing Back

Follow the procedure below to play back a cassette.



1 Turn on the amplifier and select the tape function.

2 Insert a cassette.



3 Set the DD (Dolby) NR buttons to the same position that was used when the cassette was recorded.

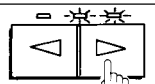
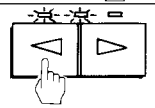
Dolby NR system	Setting	
	ON/OFF	B/C
B type	⎍	⎍
C type	⎍	⎍
OFF	⎍	Either position

4 Select the direction mode.

To playback to the end of one side only.	⎍	⇀
To playback both sides continuously *	⎍	⇄

* After playing back five times, the deck automatically stops.

5 Start playback

From the front side	
From the reverse side	

To stop playback, press ■.
To stop playback momentarily, press ❚❚.
To restart play, press ❚❚, ◀, or ▶.
To fastwind a tape rightward, press ▶▶.
To fastwind a tape leftward, press ◀◀.

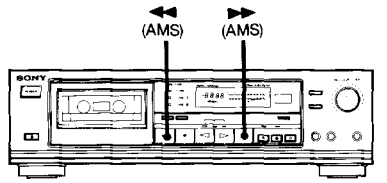
What is the Dolby NR system?
The Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals by boosting the signals during recording and lowering them during playback.

Is it necessary to set the tape type being used?
No. The deck has an automatic tape type detection system. Of the four major types of tapes, your unit can use Type I (normal), Type II (CrO_2) and Type IV (metal). The tape detection system automatically adjusts the equalization and bias current to the optimum level for the type of cassette detected.

Note
The Dolby HX PRO system is effective only during recording, not during playback.

Locating the Beginning of a Selection During Playback —Automatic Music Sensor (AMS)

The AMS function detects the blank space between selections, allowing you to quickly locate the beginning of desired selections.



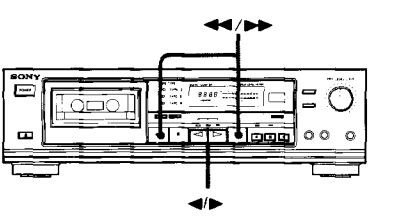
During playback, check the direction indicator and *press ▶▶ or ◀◀ referring to the following table.*

Indicator	Desired selection	
	Next selection	Selection being played
▷	▶▶ (AMS)	◀◀ (AMS)
◁	◀◀ (AMS)	▶▶ (AMS)

The PLAY indicator blinks while the AMS searches for the beginning of the selection. After locating the beginning of the selection, playback will start automatically.

Starting Playback Automatically After Fast Winding—Auto Play

The Auto Play function automatically starts playing back a cassette after fast winding it to the beginning.



Start Auto Play

From the beginning of the front side:	Press ▶ and ◀◀.
From the beginning of the reverse side:	Press ◀ and ▶▶.

If a cassette begins playing back before reaching the beginning
The Memory Play function is activated. Press the Memory button to turn off the MEMORY indicator.

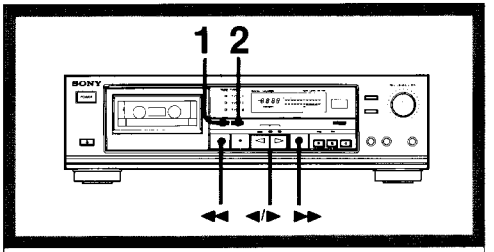
The AMS may skip a selection
- If the ◀◀ or ▶▶ button is pressed immediately before the following selection.
- If there is noise in the space between selections.
- If the space is less than four seconds long.

The AMS will treat the following as blanks:
- a long pause in the music
- a passage of low frequencies or very low volume
- a gradual increase or decrease in volume

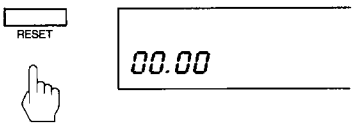
The AMS deactivates at the end of a tape
When no blank is detected, the AMS will deactivate at the end of a tape even if the direction mode switch is set to continuous play.

Locating a Desired Position Using the Counter
—Memory Play

The Memory Play function allows you to use the counter to record a desired position on a cassette for fast relocation and automatic playback later.



1 At the desired position during playback.



2

3 **Returning to the Desired Position During Playback**
Check the direction indicator and press the respective buttons referring to the following table.

Direction Indicator	Operation
▷	Press ▶ and ◀◀
◁	Press ◀ and ▶▶

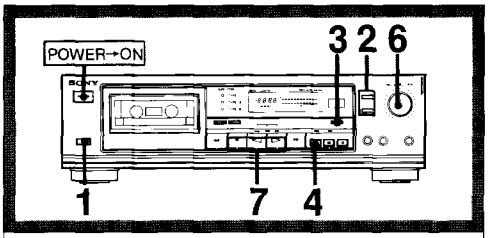
If you press only the ◀◀ or ▶▶ button, the tape will be rewound and the unit will stop when the counter reaches 00.00 (Memory stop).

To deactivate the Memory Play function
Press the MEMORY button, turning off the MEMORY indicator.

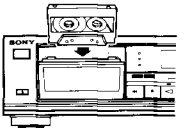
Do not turn off the power while using the counter
Turning the power off, then on again resets the counter to 00.00.

Recording

Follow the procedure below to record a source on a cassette.



1 Insert a cassette.



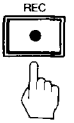
2 Select the Dolby NR setting.

Dolby NR system	Setting	
	ON/OFF	B/C
B type		
C type		
OFF		Either position

3 Select the side(s) to be recorded.

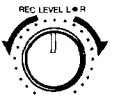
To record on one side.		
To record on both sides.		

4 Place the unit into recording standby mode.



5 Play the program source to be recorded.

6 Adjust the recording level.



7

To record on the front side of the cassette	
	Press ▶ once or ❚❚
	Press ▶ twice
To record on the reverse side of the cassette	
	Press ◀ once or ❚❚
	Press ◀ twice

To stop recording, *press* ■.

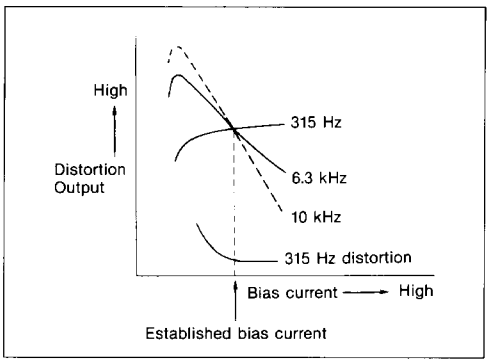
Note on step 3
Even at the position, recording automatically stops when the tape reaches the end of the reverse side.

Note on step 4
A blinking direction indicator indicates that recording is *possible on that side.*
If the cassette tab has been removed to prevent accidental erasure, the indicator will blink only for the side that can be *recorded. If both tabs have been removed, there will be no* response even when ● is pressed.

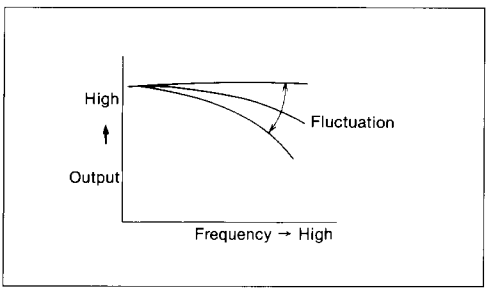
When recording with the microphone
Adjust the recording level as you would when recording from other sources. Note that no other source can be recorded *when the microphone is connected, so be sure it is unplugged* when recording from a different source.

What is the Dolby HX PRO System?

The Dolby HX PRO system provides improved linearity in high-range frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other tape decks.



As shown above, characteristics such as output level and distortion differ widely according to the bias (high-frequency) current. In conventional system, the bias current is susceptible to variations in certain recording signals (see diagram below), and this can cause fluctuations in frequency response, distortion, or other unwanted characteristics.

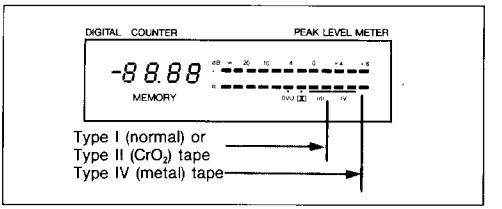


With the Dolby HX PRO system, the effective bias amount added to the bias current is controlled in millisecond units to greatly reduced distortion, improving linearity in high-range response and ensuring high-intensity recording with minimal distortion and noise.

Adjusting the Recording Level

The optimum recording level, which differs according to the tape type, is indicated on the PEAK LEVEL METER for each tape type.
Adjust the REC LEVEL control as high as possible without exceeding the recommended range for the tape type being used.

Recommended maximum PEAK LEVEL METER reading

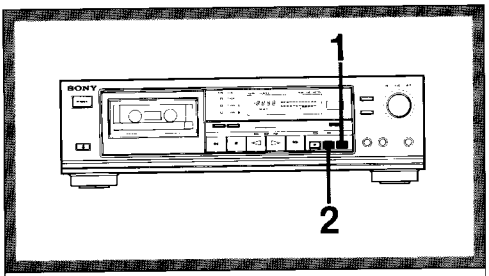


Tips on recording level adjustment

- Adjust the recording level as high as possible without causing distortion in the recorded sound.
  If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

Inserting a Blank Space During Recording
—Record Muting

The Record Muting function allows you to insert a four-second blank to enable proper AMS operation (see page 8), and to replace unwanted input with a blank of any desired length.



1 While recording, press ○.

- **To create a four-second blank, press the button and release it immediately.**
  The ● indicator will start to blink. During this time, no incoming signals are recorded on the tape. After four seconds, the indicator ❚❚ lights up and the unit enters the recording pause mode.

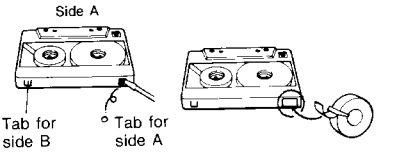
- **To create a blank longer than four seconds, press ○ for the desired length of time.**
  After four seconds, the ● indicator will blink with greater rapidity. When you release ○ , the ❚❚ indicator lights up and the unit goes into the recording pause mode.

2 Press ❚❚ to resume recording.

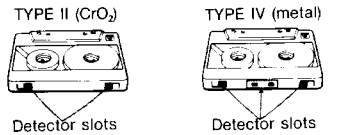
Notes on Cassettes

To protect a recording on side A or B
Break out the respective tab.

To recover a cassette for recording
Cover the respective slot with tape.



When using TYPE II (CrO_2) or TYPE IV (metal) cassettes
Be careful not to cover the detector slots which are necessary for automatic tape type detection



Cassette care

- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures or moisture.

Maintenance

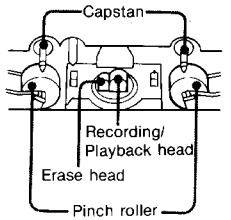
Cleaning the Heads and Tape Path

Clean all surfaces over the tape travels after every ten hours of operation. To obtain high-quality recording sound, however, cleaning before every recording is recommended.

1 Press ⏏ to open the cassette holder.

2 Wipe the heads, the pinch rollers and the capstans with a cotton swab slightly moistened with cleaning fluid or rubbing alcohol.

Wipe the heads, the pinch rollers and the capstans with a cotton swab slightly moistened with tape cleaning fluid or alcohol.



After cleaning the heads and tape path, do not insert a cassette until the areas cleaned are completely dry.

Demagnetizing the Heads

The heads will become gradually magnetized over an extended period of use, causing hiss and loss of high frequencies. To avoid this, demagnetize the heads and all metal parts in the tape path using a commonly available head demagnetizer.
Make sure that the unit is turned off during the demagnetizing operation.

Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzine.

Specifications

Recording system 4-track 2-channel stereo
Fast winding Approx. 90 sec. (with C-60 cassette)
Bias AC Bias
Signal-to-noise ratio (NAB, at peak level)

DOLBY NR button / Cassette	OFF	B-TYPE ON	C-TYPE ON
Type IV (Sony METAL-ES)	58dB	65dB	71dB
Type II (Sony UX-S)	57dB	64dB	70dB
Type I (Sony HF-S)	54dB	61dB	67dB

Total harmonic distortion
1.0 % (with Sony METAL-ES cassettes)
Frequency response (DOLBY NR OFF)

Type IV cassette (Sony METAL-ES)	20 – 16,000 Hz (±3 dB) 30 – 15,000 Hz (±3 dB, 0VU recording)
Type II cassette (Sony UX-S)	20 – 16,000 Hz (±3 dB) 30 – 15,000 Hz
Type I cassette (Sony HF-S)	25 – 15,000 Hz (±3 dB) 30 – 14,000 Hz

Wow and flutter 0.09% WRMS (NAB)

Inputs

Microphone inputs (phone jacks)	Sensitivity	0.25 mV (–70 dB)
	For a low-impedance microphone	
Line inputs (phono jacks)	Sensitivity	77.5 mV (–20 dB)
	Input impedance	50k ohms

Outputs

Line outputs (phono jacks)	Output level	0.44 V (–5 dB) at a load impedance of 47k ohms
	Load impedance	over 10k ohms
Headphones output (stereo phone jack)	Output level	–28 dB at a load impedance of 8 ohms

General
Power requirements
120 V AC, 60 Hz
Power consumption
22 W
Dimensions Approx. 430 × 123 × 295 mm (w/h/d)
(17 × 4⅞ × 11⅝ inches)
including projecting parts and controls
Weight Approx. 4.0 kg (8 lbs 13 oz)
Supplied accessory
Connecting cord (2)

Design and specifications are subject to change without notice.

Troubleshooting Guide

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer.
Before proceeding with these trouble checks, verify that:

- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

Function buttons and tape transport problems

Symptom	Cause	Remedy
The function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
	Cassette is not properly inserted.	Insert the cassette correctly.
	Button was pressed immediately after the power was turned on.	Wait until the ▮▮ indicator stops blinking.
● button does not activate. (● indicator does not light up.)	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with tape (page 12).
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
	The Memory Play function is activated.	Press the MEMORY button to deactivate the function.
Excessively loud tape transport noise during fast winding.	This noise is caused by the cassette and does not signify a mechanical problem.	—

Recording and playback problems

Symptom	Cause	Remedy
Recording or playback cannot be made or there is a decrease in sound level.	Heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly (page 5).
	Improper setting of the amplifier controls.	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout.	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions shown on page 13.
Incomplete erasure.	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies.	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies.	Improper setting of the DOLBY NR switches.	When playing back, set the switches to the same position used in recording.
	The unit is placed near a television set	Move the unit away from the television set.
The desired selection cannot be located even though you activate the AMS.	There is noise in the space between selection.	Rerecord the tape if you can, and insert a blank space of four seconds using the ○ button.
	The space is less than four seconds long.	
	The ▶▶ or ◀◀ button is pressed immediately before or after the beginning of the following selection.	—

Noise		
Symptom	**Cause**	**Remedy**
Hum noise.	The unit is stacked on or under the amplifier.	Separate the units.
Noise is recorded.	Recording was made near equipment such as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from the television set or color monitor.